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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,247	06/01/2005	Thomas Kleinbeck	R.304539	1296

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RONALD E. GREIGG
GREIGG & GREIGG P.L.L.C.
1423 POWHATAN STREET, UNIT ONE
ALEXANDRIA, VA 22314

EXAMINER

LAZO, THOMAS E

ART UNIT	PAPER NUMBER
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3745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/537,247

Applicant(s)

KLEINBECK ET AL.

Examiner

Thomas E. Lazo

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 10, 11, 14, 15, 20, 21, 23-25 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 12, 13, 16-19, 22, 26 and 30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/1/05</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 11, 14, 15, 20, 21, 23-25, 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer et al. in view of Stiefel et al., Djordjevic, and Ricco. Meyer et al. discloses a high-pressure pump, comprising a drive shaft 2, at least one pump element, which has a pump piston 1 driven in a reciprocating motion by the drive shaft 2, a ring 3 rotatably supported on a portion of the drive shaft 2 disposed eccentrically to the pivot axis of the drive shaft 2, on which ring the pump piston 1 is braced via a support element 11, and many microscope indentations 21,22 formed in the ring 3, wherein the microscopic indentations 21,22 have a depth of approximately 2 to 30 micrometers and/or a width of approximately 15 to 30 micrometers and/or a spacing from one another of approximately 30 to 150 micrometers, and the microscopic indentations 21,22 are embodied in the form of grooves. See Meyer et al. col. 3, lines 63-67. The fuel injection system of an internal combustion engine is an intended use and has not been treated as a limitation in the claims. Meyer et al. does not teach for a solid lubricant film applied to the ring and/or to the support element, at least in their contact region, wherein the solid lubricant film contains polytetrafluoroethylene and/or graphite and/or molybdenum disulfide, the solid lubricant film has a binder material, in which solid lubricant particles are

embedded, distributed uniformly, and an adhesion-promoting intermediate layer is disposed between the surface of the ring and/or of the support element and the solid lubricant film.

Steifel teaches for a high-pressure pump with a drive shaft 20, a pump piston 35, and a ring 28 and that there is a solid lubricant film applied to the ring 28 and/or to the support element 39, at least in their contact region, wherein the solid lubricant film contains polytetrafluoroethylene and/or graphite for the purposes of preventing seizure between the ring and support element. See Steifel col. 3, lines 17-30 and col. 4, lines 9-14.

Djordjevic teaches for a high-pressure pump with a drive shaft 64, a pump piston 40, and a ring 32 and that there is a solid lubricant film applied to the support element 50, wherein the solid lubricant film contains polytetrafluoroethylene and/or graphite, the solid lubricant film has a binder material, in which solid lubricant particles are embedded, distributed uniformly for the purposes of preventing seizure between the ring and the support element. See Djordjevic col. 7, line 53 – col. 8, line 16.

Ricco teaches for a high-pressure pump with a drive shaft 28, a pump piston 42, and a ring 39 and that there is a solid lubricant film 70 applied to the support element 43, wherein the solid lubricant film contains polytetrafluoroethylene and an adhesion-promoting intermediate layer 69 is disposed between the surface of the support element 43 and the solid lubricant film 70 for the purposes of preventing seizure between the ring and the support element. See Ricco col. 3, lines 12-28.

Since Meyer et al., Steifel et al., Djordjevic, and Ricco are all high-pressure pumps, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the high pressure pump of Meyer et al, based on the teachings of Steifel et al,

Art Unit: 3745

Ricco, and Djordjevic to include a solid lubricant film (40) applied to the ring (18) and/or to the support element (24), at least in their contact region, wherein the solid lubricant film (40) contains polytetrafluoroethylene and/or graphite and/or molybdenum disulfide, the solid lubricant film (40) has a binder material, in which solid lubricant particles are embedded, distributed uniformly, and an adhesion-promoting intermediate layer (44) is disposed between the surface of the ring (18) and/or of the support element (24) and the solid lubricant film (40) for the purposes of preventing seizure between the ring and the support element.

Claims 10, 14, 20, 23, 24, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichimaru in view of Steifel et al., Djordjevic, and Ricco. Ichimaru discloses a high-pressure pump, comprising a drive shaft 2, at least one pump element, which has a pump piston 4 driven in a reciprocating motion by the drive shaft 2, a ring 31 rotatably supported on a portion of the drive shaft 2 disposed eccentrically to the pivot axis of the drive shaft 2, on which ring the pump piston 4 is braced via a support element 48, and many microscope indentations 39 formed in the ring 31, wherein the microscopic indentations 39 are embodied in the form of grooves. The fuel injection system of an internal combustion engine is an intended use and has not been treated as a limitation in the claims. Ichimaru does not teach for a solid lubricant film applied to the ring and/or to the support element, at least in their contact region, wherein the solid lubricant film contains polytetrafluoroethylene and/or graphite and/or molybdenum disulfide, the solid lubricant film has a binder material, in which solid lubricant particles are embedded, distributed uniformly, and an adhesion-promoting intermediate layer is disposed between the surface of the ring and/or of the support element and the solid lubricant film.

The teachings of Stiefel et al., Djordjevic, and Ricco have been stated above.

Since Ichimaru, Steifel et al, Djordjevic, and Ricco are all high-pressure pumps, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the high pressure pump of Meyer et al, based on the teachings of Steifel et al, Ricco, and Djordjevic to include a solid lubricant film applied to the ring and/or to the support element, at least in their contact region, wherein the solid lubricant film contains polytetrafluoroethylene and/or graphite and/or molybdenum disulfide, the solid lubricant film has a binder material, in which solid lubricant particles are embedded, distributed uniformly, and an adhesion-promoting intermediate layer is disposed between the surface of the ring and/or of the support element and the solid lubricant film for the purposes of preventing seizure between the ring and the support element.

Allowable Subject Matter

Claims 12, 13, 16-19, 22, 26, and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

Prior art made of record but not relied upon is considered pertinent to Applicant's disclosure and consists of five patents.

Buettner et al., Yamamura et al., Eickmann, Dantlgraber, and Morita et al. are cited to show high-pressure piston pumps with eccentric rings sliding against piston support elements.

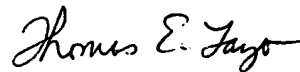
Art Unit: 3745

Contact Information

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Thomas Lazo whose telephone number is (571) 272-4818. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Edward Look, can be reached on (571) 272-4820. The fax phone number for this Group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thomas E. Lazo
Primary Examiner
Art Unit 3745
April 9, 2007